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RELEVANCE OF INTERNATIONAL LABOUR MIGRATION FOR CLIMATE ADAPTATION: A PERSPECTIVE FROM BANGLADESH

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Abstract

Global climate change will severely affect many developing countries like Bangladesh. A large number of people are likely to be displaced in Bangladesh in the future due to climatic hazards. Studies predict that such displacements will occur mostly in the southern, southwestern, and northwestern parts of Bangladesh. The displaced people are likely to move to other parts of Bangladesh as well as across international borders. Managing such migratory flows is a real challenge for policymakers. Given the limited options for domestic relocation, the paper argues that Bangladesh should look at the international labour market as a possible solution. The paper concludes that to reap the benefits of using short-term labour migration as an adaptation tool, Bangladesh has to design appropriate policies in consultation with competent bodies. Implementation of such policies further requires commitments and help from developed countries and international organisations.

1. Introduction

Bangladesh ranks high among the most climate-vulnerable countries in the world. A major implication of the changing climate will be the displacement of large number of people. A report by the International Organization for Migration (IOM) notes that as many as 40 million people in Bangladesh are likely to be displaced in case of a one-meter rise in sea levels.[1] If other climate-related hazards are taken into account, this number will increase significantly. Displacement due to climate change can result from climatic events such as cyclones and floods, in addition to climatic processes such as sea-level rise

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[1] IOM, *Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh,* Dhaka: IOM Regional Office for South Asia, 2010, p. 6.

(SLR), and is likely to occur in the southern, southwestern, and northwestern parts of Bangladesh.

Historical evidence suggests that this displacement could result in both migration to other parts of Bangladesh and migration across international borders. The pattern of internal displacement takes the form of rural-urban migration, especially to overcrowded major cities such as Dhaka. Given the country's high population density, poor urban infrastructure, and governance, Bangladesh does not have adequate resources, such as housing, to provide the domestic relocation of large number of people. Moreover, climate migration could be seen as a potential national security issue, which may contribute to the deterioration of relations between Bangladesh and its neighbouring countries. Under these circumstances, Bangladesh should look at the international labour market as a possible solution. In fact, the cheap labour provided by migrant workers from the developing countries is in high demand in the international labour market. Bangladesh has been a major exporter of manpower to the Middle East and Southeast Asian labour markets, but still it has many unexplored markets for labour export.

With this background, this paper argues that adopting international labour migration as a strategy for climate adaptation would be a positive and timely policy decision. In this endeavour, the paper begins with introductory remarks in the first Section while the second Section attempts to conceptualise international labour migration as an important adaptation strategy. The third Section deals with the vulnerabilities that Bangladesh faces with regard to climate change and displacement, and the fourth Section explores how international labour migration can be linked to increasing climate resilience in Bangladesh. The fifth Section recommends options for policy interventions at multiple levels. Specifically, this Section stresses that, in the context of the demand in the international labour market, the Government of Bangladesh (GOB) can train people living in climate-vulnerable areas to prepare them for these markets. Finally, the paper concludes that by recognising international labour migration as an adaptation tool in the national policy, Bangladesh can channel migratory flows in a more regulated and documented way. This enhanced policy focuses on international labour migration would increase remittance inflow to strengthen the national reserve at the macro-level as well as migrant families' access to more diverse livelihood options and their adaptive capacity at the micro-level.

2. Conceptualising Climate Change and Migration

The conceptual and theoretical development of the issue of climate-induced migration is in a nascent stage. This is partly because the broader issue of environmental migration itself only emerged as a theme of academic discussion,

with the seminal work of Jacobson[2], just before the first Rio Earth Summit in 1992. The phenomenon itself, however, is not new. A cursory look at the historical records of migration in many parts of the world indicates that climate change in specific regions has induced migration for centuries. For example, the Dust Bowl migration from the Great Plains to California in the United States (U.S) occurred in the 1930s in the wake of severe droughts.[3] Likewise, people migrated as a result of changes in the climatic conditions in ancient China.[4]

The contemporary literature on climate-induced migration is characterised by two polarised views on the issue. At one extreme, climate-induced migration is considered as a failure of adaptation and perceived as forced migration. At the other extreme, it is considered as an adaptation strategy itself.[5] The debate is partially attributed to the fact that the issues that fall under the broad heading of environmental migration are complex.[6] These two views are examined in detail below.

2.1 Climate Change and Forced Migration

The scholars who consider climate-induced migration to be a new kind of forced migration tend to securitise such population movements. They suggest that these migrants are a threat to the stability and prosperity of the developed world. Many scholars including Raleigh and Gleditsch,[7] however, are of the opinion that the causal relationship between migration and problems in the developed world is not supported by adequate evidence.

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[2] J.L. Jacobson, *Environmental Refugees: A Yardstick of Habitability*, Worldwatch Paper no: 86, Washington DC.: Worldwatch Institute, 1988.

[3] R. Mcleman, and B. Smit, "Migration as an Adaptation to Climate Change", *Climatic Change*, Vol. 76, No. 1, 2006, pp. 31–53.

[4] B. Smit and Y. Cai, "Climate Change and Agriculture in China", *Global Environmental Change*, Vol. 6, No. 3, 1996, pp. 205-214.

[5] B. Mayer on "Migration as a Sustainable Adaptation Strategy", Paper presented at a Conference on *Climate Vulnerability and Adaptation: Marginal Peoples and Environments* organised by the Initiative on Climate Adaptation Research and Understanding through the Social Sciences on May 5-8, 2011, Ann Arbor, Michigan.

[6] J. Barnett, and M. Webber, *Accommodating Migration to Promote Adaptation to Climate Change*, Policy Research Working Paper, no. 5270, Washington: The Word Bank, 2010.

[7]C. Raleigh, L. Jordan, and I. Salehyan, *Assessing the Impact of Climate Change on Migration and Conflict* ,Working Paper for Social Dimensions of Climate Change, Washington, DC: The World Bank, 2008; N. Gleditsch, R. Nordas, and I. Saleyhan, "Climate and Conflict: The Migration Link", *Coping with Crisis*, Working Paper Series. Kyoto: International Peace Academy, 2007.

Contrary to the right-wing view of climate-induced migration and conflict, a group of scholars including B. Docherty, Biermanns and McAdam[8] consider such migration from a more legalistic and right-based approach. These scholars argue that environmentally displaced people should be referred to as "climate refugees" so that they can have certain rights under international refugee law. Some scholars such as Professor T. Siddiqui, however, consider this term inappropriate.[9] They argue that in order to qualify as a refugee, a person must cross an international border "owing to well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinion"[10].

Similarly, B.Mayer[11] argues that climate-induced migrants are not as easily classified as refugees because establishing environmental or climate changes as direct causes of migration is far more difficult. Environmental causes can be counted only as part of the inducement of migration; other non-climatic variables, such as better economic options in the destination region, may be responsible for such migration. Therefore, determining the causality between economic "pull" and environmental "push" is subjective.[12]

Due to legal constraints, environmental migrants are not protected under any existing international law, and thus such movements are increasingly being associated with threats and fear. The nature of such movements indicates that with the state of knowledge and data on weather-related issues, along with other social indicators, such climate-induced migration can roughly be predicted. Therefore, with careful advanced planning, these flows can be managed and

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[8] B. Docherty and T. Giannini, "Confronting a Rising Tide: a Proposal for a Convention on Climate Change Refugees", *Harvard Environmental Law Review*, Vol. 33, No. 2, 2009, p. 349; F. Biermann, and I. Boas, "Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees", *Global Environmental Politics*, Vol. 10, No. 1, 2010, pp. 60-88; J. McAdam, and B. Saul, "Displacement with Dignity: International Law and Policy Responses to Climate Change Migration and Security in Bangladesh" in *German Yearbook of International Law*, Sydney Law School Research Paper No 10/113, 2010; J. McAdam, "Swimming against the Tide: Why a Climate Change Displacement Treaty is Not the Answer", *International Refugee Law*, Vol. 23, No. 1, 2011, pp. 2-27.

[9] T. Siddiqui, "Climate Change and Human Security: Migration as an Adaptation Strategy", Paper presented at the *4th Annual Convention of the Consortium of Non-Traditional Security Studies in Asia (NTS-Asia)* organised by NTS-Asia in Singapore on 25-26 Nov. 2010.

[10] Convention relating to the Status of Refugees, 189 U.N.T.S. 150, 28 July 1951, Art. 1(A)2.

[11] B. Mayer, 2011, *op. cit.*

[12] O. Brown, *Migration and Climate Change*, IOM Migration Research Series, no: 31., Geneva: IOM, 2008.

utilised as part of broader adaptation policy, a topic which is discussed in this paper.

2.2 Climate Change and International Labour Migration

The recognition of the nexus between climate change and international labour migration as an adaptation strategy is relatively new. In direct contrast to the view presented above, this conceptualisation calls for orderly migration from vulnerable areas well in advance as opposed to disaster response. This paper argues that such orderly migration should take the form of circular voluntary labour migration from vulnerable countries to more secured countries and regions. By its very nature, such migration should be short to medium term in terms of duration.

Mainstream labour migration theories, however, do not acknowledge this voluntary migration. The neoclassical theory of migration based on equilibrium models, for example, holds that migration is pursued to accumulate economic capital by individuals. Building on the rational actor model, this theory postulates that individuals migrate as a response to higher wages offered somewhere else. Therefore, in this view, migration is mainly caused by labour market disequilibria that produce wage differentials across national boundaries. In the final analysis, migration ensures an optimal distribution of labour and the efficient allocation of resources across the international market benefiting both the sending and the destination countries.[13] Adherents of this theory do not recognise any other causal variables present in the decision to migrate, as they assume that individuals make the migration decision only when their perceived economic benefits exceeds their perceived economic costs of migration.[14]

In sharp contrast to this position, structural theorists argue that migration decision is embedded in the political, social, and economic forces at work at the local, national, and international levels. Therefore, migration reinforces the dependency of peripheral countries on core countries.[15] One of the salient

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[13] M.P. Todaro, *International Migration in Developing Countries: A Review of Theory, Evidence, Methodology and Research Priorities*, A WEP Study, Geneva: International Labour Office, 1976; M.P. Todaro, "A model of labour migration and urban unemployment in less developed countries", *The American Economic Review*, Vol. 59, 1969, pp. 138-148; D. S. Massey, "An evaluation of international migration theory: The north Mexican case", *Population and Development Review*, Vol. 20, No. 4. Dec. 1994; D.S. Massey, "Theories of international migration: a review and appraisal", *Population and Development Review*, Vol. 19, No. 3, September 1993.

[14] S. Castles, and M. J. Miller, *The Age of Migration: International Population Movements in the Modern World*, New York: The Guilford Press, 1998.

[15] A. Portes, and J. Walton, *Labour, Class and the International System*, New York: Academic Press, 1981; D. S. Massey, J. Arango, G. Hugo, A. Kouaouci, A. Pellegrino and J. E. Taylor, *World in motion: Understanding international migration at the end of*

features of this approach is that it recognises that other forces are at work and these forces influence the migration decision, such as poverty, landlessness, and the lack of educational, cultural, and institutional services in labour-exporting countries.[16] It is important to note that these structural factors can be exacerbated by climatic changes in a given area, especially in the developing countries. As a result, people tend to migrate to the developed world. For example, in a study of a village in Thailand, Rigg found that environmental effects on crop yields, limited land, and droughts did play important roles in migrant's decision to go abroad.[17]

This structural hypothesis, however, fails to consider the increasingly important role played by remittances in creating social resilience in sending countries. Such an insight is provided by the new economics of labour migration. This approach holds that migration is not a decision of an individual; rather, it is a decision made by families. According to these theorists, the motivation for migration comes from the desire to diversify family income and thereby reduces exposure to risk.[18] In other words, migration is a result of market failures outside the labour market. It stresses the role of remittances sent by family members from diverse geographic locations in minimizing the risk for that family's household to economic uncertainties.[19] A study conducted by Adger and his colleagues found that the remittances contributed significantly to enhancing the social resilience of vulnerable coastal communities in Vietnam by increasing the human, social, and economic capital of the migrant families.[20]

The combination of the basic tenets of the structural approach and the new economics of labour migration provide helpful insights into our understanding of how international labour migration can be used as an adaptation strategy to increase the resilience of the community concerned. In fact, migration has the potential to increase both household and community-level adaptation by addressing the drivers of socio-economic vulnerability, managing climate risk,

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the millennium, New York: Oxford University Press, 1998; Massey, "An evaluation of international migration theory", 1994, *op.cit.*; Massey, "Theories of international migration", 1993, *op. cit.*.

[16] M. Rahman, "Emigration and Development: The Case of a Bangladeshi Village", *International Migration*, Vol. 38, No. 4, 2000, pp. 109-130.

[17] J. Rigg, *International contract labour migration and the village economy: The case of Tambon Don Han, North-Eastern Thailand*, Papers of the East-West Population Institute, no. 112, Honolulu: East-West Center, 1989.

[18] O. Stark, and D. E. Bloom, "The New Economics of Labour Migration", *American Economic* Review, Vol. 75, No. 2, 1985, pp.173-178; R. Skeldon, *Migration and development: A global perspective*, England: Longman, 1997; Massey *et al*. "*World in Motion",* 1998, *op. cit.*

[19] O. Stark, *The Migration of Labor*, Cambridge: Basil Blackwell, 1991.

[20] W. Adger, P. Kelly, A. Winkels, L. Huy, and C. Locke, "Migration, Remittances, Livelihood Trajectories, and Social Resilience", *Ambio*, Vol. 31, No. 4, 2002, pp. 358-66.

and building social capacity. The following Table shows how migration can contribute to adaptation at various levels.

Table 1: Nexus between International Labour Migration and Adaptation

Addressing drivers of vulnerability	Managing climate risk	Building social capacity for response
International labour migration reduces key socio-economic vulnerability through poverty reduction and livelihood diversification.	By targeting area-specific, climate-proofing infrastructure such as housing and drip irrigation, international labour migration can help to make households and communities resilient to floods, cyclones, droughts, etc.	International labour migration facilitates creation of community-based organisations and work as an important source of financial resources for community-level adaptation initiatives.
Household level ----------Community level		

Source: Prepared following H. McGray *et al.'s* schematic diagram on adaptation and Development, 2007.[21]

3. Climate Vulnerability and Migration: The Context of Bangladesh

Situated in the low-lying Ganges-Brahmaputra River Delta, Bangladesh is one of the most climate-vulnerable countries in the world.[22] It is particularly vulnerable to droughts, flooding, sea-level rise, cyclones, and storm surges. Many scholars project that as many as 40 million Bangladeshis will migrate due to these climatic changes, though no scientifically proven estimates are available.[23]

This section attempts to assess Bangladesh's socio-physical vulnerability to climate change and its associated impacts on migration by dividing the factors associated with this susceptibility into two categories, climatic and non-climatic variables. Climatic variables are further divided into *climatic processes* and *climatic events*[24].

[21] H. McGray, A. Hammill, and R. Bradley, *Weathering the Storm, Options for Framing Adaptation and Development*., Washington: World Resources Institute, 2007.

[22] Intergovernmental Panel on Climate Change (IPCC), 2001, *Climate Change 2001 — Impacts, Adaptation and Vulnerability*, Working Group II contribution to the Third Assessment Report of the IPCC, p. 578, available at http://www.grida.no/climate/ipcc_tar/wg2/pdf/wg2TARchap11.pdf, accessed on 29 July, 2011; GOB, *Bangladesh Climate Change Strategy and Action Plan 2008*, Ministry of Environment and Forests, Dhaka, 2008.

[23] IOM, *Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh, 2010*, *op. cit.*

[24] O. Brown, 2008, *op. cit.*

The term *climatic processes* refers to the slow changes in climatic patterns that induce human movement from an area over a long period of time, such as SLR, coastal erosion, salt water intrusion, rising temperature, changing rainfall patterns, and droughts. Since these slow processes make an area uninhabitable, human migration from the areas concerned will be largely permanent in nature. In contrast, the term *climatic events* refers to sudden and dramatic climatic hazards such as floods and cyclones. These events displace people suddenly, and the displaced often return to their homes after a certain period of time. Therefore, human movements triggered by such sudden-onset events tend to be temporary in nature. Unlike climatic variables, non-climatic variables are primarily socio-economic factors that determine vulnerability.

3.1 Climatic Processes

The climatic processes to which Bangladesh is seriously vulnerable includes SLR, coastal erosion, salt water intrusion, and droughts, among others. Annex 1 shows the different climate vulnerabilities in Bangladesh. These processes in the context of their impacts on human movements are discussed below.

SLR is regarded as one of the most critical climatic processes that could impact Bangladesh severely engulfing 17.5 per cent of its total landmass in case of a one-meter rise.[25] However, a conservative estimate of the 4th Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) predicts that the sea level will rise by 79 cm by the end of the 21st century[26] and Bangladesh will be severely affected. Since the coastal areas vulnerable to SLR are densely populated, estimates suggest that 13 million to 40 million people could be displaced. Moreover, SLR is also projected to have a secondary impact on other climatic processes and events. For example, a greater mean SLR would exacerbate salinity intrusion into the freshwater supply of the coastal areas[27]and would intensify storm surges during cyclones[28].

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[25] IPCC, *Second Assessment Report: Climate Change 1995*, available at http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf, accessed on 29 July 2011, p.8.

[26] IPCC, *Climate Change 2007 — Impact, Adaptation and Vulnerability*, Working Group II contribution to the Fourth Assessment Report of the IPCC, available at http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter6.pdf, 2007, accessed on 29 July 2011.

[27] IPCC, *Climate Change 2007 — The Physical Science Basis*, Working Group I contribution to the Fourth Assessment Report of the IPCC, Cambridge University Press, UK, 2007, available at http://www.ipcc.ch/publications_and_data/ publications_ipcc_ fourth_assessment_report_wg1_report_the_physical_science_basis.htm , accessed on 29 July 2011.

[28] S. Agrawala, T. Ota, , A.U. Ahmed, J. Smith, M.V. Aalst, *Development and Climate Change in Bangladesh: Focus on Coastal Flooding and the Sundarbans*, France: OECD, 2003.

Bangladesh also experiences seasonal droughts often leading to *Monga* – seasonal hunger caused by unemployment in dry season because of low yields – in the northwestern region.[29] The rainfall in this region is approximately half of the national average (1240 mm/year) with a recent trend (from 1978 to 1990) of increasing temperatures (0.05°C/year) and shorter monsoons.[30] Experts expect rising temperatures caused by climate change further reduce rainfall and aggravate droughts in these areas, causing declines in agricultural production and hardship to the poor. For example, by the IPCC's projection, the production of rice and wheat would decrease by as much as 8 per cent and 32 per cent, respectively, in next forty years.[31]

Reduced food production would increase migration from the drought-prone areas. Such a causal link is supported by S. F. Feng and his colleagues.[32] In their study, they found a significant effect of poor crop yields caused by climate change on the rate of emigration from Mexico to the U.S. Professor Richard Black and his colleagues[33] predict that the decline in agricultural production in drought-prone areas would act as a significant push factor for rural-urban migration as well as international migration from northwestern Bangladesh. A study on the slums in Dhaka, the capital of Bangladesh, has found that Rangpur, a district in the drought-prone region, was one of the top five districts of origin, representing the origin of 4.6 per cent of the slum dwellers.[34]

3.2 Climatic Events

Floods are one of the top climatic events that have serious implications for human displacement in Bangladesh. The three largest rivers in Bangladesh – the Brahmaputra, the Ganges, and the Meghna – combine to discharge as much as 180,000 m^3/s (the second greatest discharge in the world after the Amazon) during the monsoon.[35] This enormous volume of discharge is a clear indication that Bangladesh is highly vulnerable to annual monsoon flooding.

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[29] GOB, *Bangladesh Climate Change Strategy and Action Plan,* 2008, *op. cit.*

[30] M. Rahman, "Emigration and Development", 2000, *op cit.*

[31] IPCC, *Climate Change 2007- Impact, Adaptation and Vulnerability*, *op. cit,* pp. 273-313.

[32] S. F. Feng, A. B. Krueger, and M. Oppenheimer, "Linkages among climate change, crop yields and Mexico-US cross-border migration", *Proceedings of the National Academy of Science*, Vol. 107, No. 32, 2010, pp. 14257-14262.

[33] R. Black, D. Kniveton, R. Skeldon, D. Coppard, A. Murata, and K. Schmidt-Verkerk, *Demographics and Climate Change: Future Trends And their Policy Implications for Migration*, Working Paper, no. T-27. Brighton: Development Research Centre on Migration, Globalisation and Poverty, University of Sussex, 2008.

[34] Centre for Urban Studies, *Slums of Urban Bangladesh: Mapping and Census 2005*, Dhaka: CUS, 2006, available at http://www.cpc.unc.edu/measure/publications/pdf/tr-06-35.pdf, accessed on 31 July 2011.

[35] GOB, *Bangladesh Climate Change Strategy and Action Plan, 2008, op. cit.*

T. Akter[36] found that the frequency of major flood occurrences has gone up since 1990. The IPCC[37] acknowledges that severe and recurrent floods in Bangladesh in recent times are an example of observed climate anomalies. Moreover, estimates suggest that eastern India and Bangladesh will receive as much as 20 per cent more rain by 2050.[38] Generally, a quarter of the country is inundated with flooding in an average year, while once every 4–5 years the country experiences severe flooding. For example, two severe floods – in 1988 and 1999 – inundated more than 60 per cent of the country and caused 2,000–6,500 and 1,100 deaths, respectively, displacing 45 million and 30 million people, in that order.[39] Therefore, floods have been a major driver of migration for many Bangladeshis. Another study has also confirmed that floods play an important role in the decision of people to migrate (especially rural-urban migration), as affected people want to replenish asset values damaged by floods.[40]

If the IPCC's prediction holds true and the intensity of tropical cyclones does increase due to changes in climatic processes, the effects on Bangladesh will be concerning. Data shows that on an average, tropical cyclones strike Bangladesh every three years.[41] T. Akter reported that since the 1990s, Bangladesh has experienced an increase in the frequency and intensity of tropical cyclones that hit the country[42]; Cyclone Sidr (2007) and Cyclone Gorky (1991) are examples of super cyclones. Coupled with high winds and storm surges of up to seven meters, these tropical cyclones cause extensive damage to houses, lives, and livelihoods. Therefore, cyclones are considered as a major driver of mass displacement. The most recent cyclone, *Aila*, affected 3.9 million people and displaced 76,478 families in the two worst-affected districts alone, and it increased seasonal out-migration from the affected areas significantly.[43]

3.3 Non-Climatic Variables

[36] T. Akter, *Climate Change and Flow of Environmental Displacement in Bangladesh* Dhaka: Unnayan Onneshan-The Innovators, 2009.
[37] IPCC, *Climate Change 2007- Impact, Adaptation and Vulnerability*, *op. cit.*
[38] J. Houghton, *Global Warming: The Complete Briefing*, Cambridge: Cambridge University Press. Cited in O. Brown, *Migration and Climate Change*, 2008, *op. cit.*
[39] GOB, *Bangladesh Climate Change Strategy and Action Plan*, 2008, *op. cit.*
[40] I. Rayhan, and U. Grote "Coping with Floods: does rural-urban migration play any role for survival in rural Bangladesh", *Journal of Identity and Migration Studies*, Vol.1, No. 2, 2007, pp. 82-98.
[41] GOB, *Bangladesh Climate Change Strategy and Action Plan*, 2008, *op. cit.*
[42] T. Akter, 2009, *op. cit.*
[43] IOM, *Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh* , 2010, *op. cit.*, p. 12.

Socio-economic conditions of society have a strong bearing on the determination of its vulnerability to climate change. The IPCC[44] noted that the lack of adaptive capacity is often as important as physical exposure and creates hotspots of human vulnerability. O. Brown[45] rightly commented that natural hazards become natural disasters when society lacks the resources to fight it. For example, in 1991 *Cyclone Gorky* struck Bangladesh with wind speeds of 260 kilometers per hour, killed 138,000 people, and rendered 10 million people homeless, while in 1992 a much stronger storm, Hurricane Andrew, with wind speeds of 280 kilometers per hour, hit parts of the U.S., causing damage of US$43 billion but only 65 deaths. This example clearly indicates that the adaptive capacity of Bangladesh is far weaker than that of the U.S., in part because of Bangladesh's socio-economic issues and poor infrastructure.

Though in recent years, Bangladesh's score on the Human Development Index has slightly improved from .347 to .547, poverty is still prevalent in the country, with 40 per cent (estimated) of its people living below the poverty line.[46] More importantly, the southwestern and northwestern regions of the country, which are the most vulnerable to climate hazards, have poverty rates higher than the national average. For example, the areas of Barisal and Khulna districts, which are vulnerable to SLR and cyclones, have poverty rates of 52 per cent and 46 per cent, respectively, while in Rajshahi, the district which is the most vulnerable to droughts and the rate is 51 per cent.[47] Faced with the hydra-headed problems of climate change and socio-economic vulnerabilities, the poor and distressed are likely to migrate from these regions to the areas that they perceive would provide them with better livelihood options.[48] These migrants usually move to the urban centers, especially Dhaka and Chittagong, two of Bangladesh's major cities.

Though Bangladesh's economy still remains primarily agrarian, the overall annual urban growth rate is 2.5 per cent. This rate of urban growth is significantly higher than the 1.4-per cent population growth rate of the country. Historically, disaster-induced rural-urban migration has created pressures on the

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[44] IPCC, *Climate Change 2007- Impact, Adaptation and Vulnerability*, *op. cit.*

[45] O. Brown, 2008, *op. cit.*, p. 18.

[46] Central Intelligence Agency (CIA), *The World Fact Book*, available at https://www.cia.gov/library/publications/the-world-factbook/geos/bg.html, accessed on 2nd August 2011.

[47] Bangladesh Bureau of Statistics (BBS), Statistical Year Book, 2007. Dhaka: BBS, 2007.

[48] IOM, *Assessing the Evidence: Environment, Climate Change and Migration in Bangladesh* , 2010, *op. cit.*

urban centers in Bangladesh.[49] Thus, unplanned rural-urban migration led to *slumisation* instead of the urbanisation of major cities.[50]

Due to the diminishing capacity of the country's urban centers to absorb more migrants, many commentators including Dupont and Pearman opine that future migrants could move to neighbouring countries such as India where they have existing cultural or ethnic ties.[51] However, future climate-induced migration from Bangladesh is increasingly being seen as a national security threat to India by the Indian policymakers and security experts. It is evident from the fact that India has undertaken a mega-project of constructing a 4,000-km-long steel fence along the Indo-Bangladesh border.[52] Therefore, it can be argued that climate-induced migration is a daunting policy challenge for Bangladesh and needs adequate policy intervention to manage and regulate the flow. However, the National Adaptation Programmes of Action (NAPA) submitted by Bangladesh to the United Nations Framework Convention on Climate Change has not given any concrete direction for dealing with this challenge. With this background information, this paper argues that with a proper policy initiative, such as international labour migration from Bangladesh can be integrated into climate adaptation policy to address the challenge.

4. International Labor Migration and Climate Resilience in Bangladesh

Many scholars including Barnett, Mayer, and Siddiqui [53] argue that international labour migration can play a vital role as an important adaptive strategy in the context of climate change. Mayer opines that "conceived as adaptation, migration is not forced, but voluntary; it is not reactive, but preventive; it is not precipitated, but anticipated; it is not 'inflicted' on public authorities, but decided and organised by them or, at least, with them, with the

[49] Asian Development Bank (ADB) Proposed Loan and Technical Assistance Grant to People's Republic of Bangladesh: Emergency Disaster Damage Rehabilitation (Sector) Project, Report and Recommendations of the President to the Board of Directors, Manila, 2008.

[50] A. Barakat, "Urbanization and Internal Migration in Bangladesh: The Onset of Massive Slumization", in CR Abrar and MP Lama (eds.), *Displacement within Homelands: The IDPs of Bangladesh and the Region*, Dhaka: Refugee and Migratory Movements Research Unit (RMMRU), 2003.

[51] A. Dupont,and G. Pearman, *Heating up the planet: Climate change and security*, Lowry Institute Paper no: 12, Sydney: Lowry Institute for International Policy, 2006, p. 59.

[52] R. Prasad, "India builds a 2,500 mile barrier to rival the Great Wall of China", *Times Online*, UK, 28 December 2005, available at http://www.timesonline.co.uk/tol/news /world/asia/article782933.ece, accessed on 15 August 2011.

[53] Barnett *et. al*, 2010, *op. cit.*,; Mayer, 2011, *op. cit*; T. Siddiqui, *Climate Change and Human Security*, *op. cit.* 2010.

aim of reaching a mutually beneficial programme. Like other adaptation strategies, migration may be a way for a community to cope with a change in environmental conditions"[54]. However, to make it a viable option for the people vulnerable to climate change, a coordinated programme among various stakeholders, i.e., the country of origin, the country of destination, and international organisations, is imperative. This Section discusses the relevance of using international labour migration as a climate-adaptive strategy for Bangladesh.

4.1 International Labour Migration and Development in Bangladesh

Bangladesh has been a major labour-sending country for more than three decades. Short-term contract migration is the dominant form of population movement from Bangladesh. The major drivers of migration from Bangladesh are limited access to natural resources, ecological vulnerability, differential employment opportunities and political insatiability.[55] For Bangladesh, the Middle East and Southeast Asian countries have become the top destination countries for such contract migration since the mid-1970s. The data of the Bureau of Manpower and Employment Training (BMET) shows that Saudi Arabia, United Arab Emirates, Malaysia, Kuwait, Oman, Singapore, and Bahrain employed 37 per cent, 26 per cent, 10 per cent, 7 per cent, 6 per cent, 4 per cent, and 3 per cent, respectively, of the total number of Bangladeshi migrant workers from 1976 to 2010 (Figure: 1).

BMET data further shows that more than seven million Bangladeshis went abroad for employment (See Annex 2). Each year approximately four to five million new Bangladeshis go overseas as migrant workers.[56] Contrary to the mainstream notion that the poor do not migrate because of high migration cost, T. Siddiqui's case study[57] found that in Bangladesh, poor people can migrate by taking advantage of social networks abroad. It is important to note that a significant portion of these migrants are semi-skilled and unskilled workers accounting for 14.59 per cent and 52.63 per cent, respectively, of the total labour going abroad during this period (see Annex 2). The number of female migrants historically has been low due to social stigma and policy constraints. Recently,

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[54] Mayer, 2011, *Ibid, p.* 6.

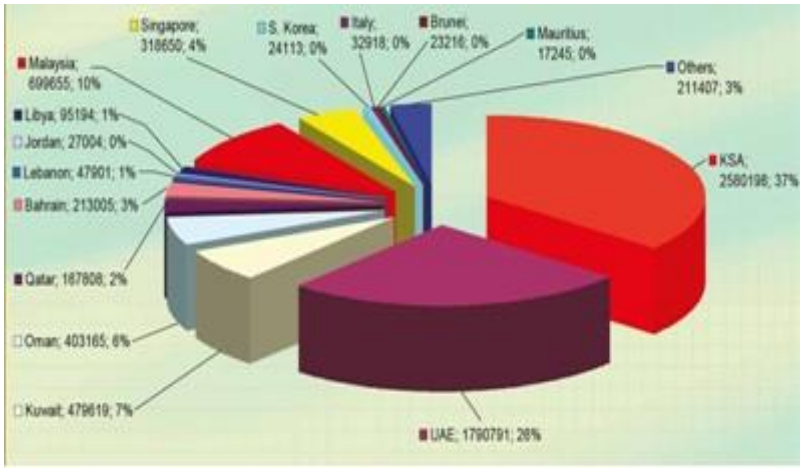
[55] R. Black, D. Kniveton, R. Skeldon, D. Coppard, A. Murata, and K. Schmidt-Verkerk, *Demographics and Climate Change: Future Trends And their Policy Implications for Migration*, Working Paper, no. T-27. Brighton: Development Research Centre on Migration, Globalisation and Poverty, University of Sussex, 2008.

[56] T. Siddiqui, *Climate Change and Human Security*, 2010, *op. cit.*

[57] T. Siddiqui on "*Migration as a livelihood strategy of the poor: The Bangladesh case"*, Paper presented at the Regional Conference on Migration, Development and Pro-Poor Policy Choices in Asia, organised by RMMRU and UK Department for International Development, Dhaka, 22–24 June 2003.

however, the government has revised its policy to facilitate the migration of women. At present, the demand for Bangladeshi female migrants is on the rise as evidenced by Saudi Arabia's interests in hiring Bangladeshi female migrants for domestic help.[58]

Figure: 1 Country-wise Overseas Employment (Major Countries) from 1976 to 2010



Source: BMET, 2010.[59]

The contributions of international labour migration to both livelihoods and the national economy of Bangladesh are considerable, with US$10.7 billion inflow of remittance in 2009. This amount is significant for a developing country like Bangladesh because it was equal to 56.1 per cent of the total export earnings of the country.[60] Remittance inflows have helped Bangladesh to combat unemployment and reduce poverty by 6 per cent.[61] "Empirical data suggest that out-migration has kept the unemployment rate virtually unchanged since the 1980s, even though the labour force growth is almost twice that of population growth. The continuous outflow of people of working-age and the accompanying inflow of remittances has played a major role in keeping the unemployment rate stable"[62].

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[58] *The Daily Star*, "KSA to resume hiring workers after 3 years", available at http://www.thedailystar.net/newDesign/news-details.php?nid=180657, accessed on 29 July 2011.

[59] BMET Online Database, 2010, available at http://www.bmet.org.bd, accessed on 2nd August 2011.

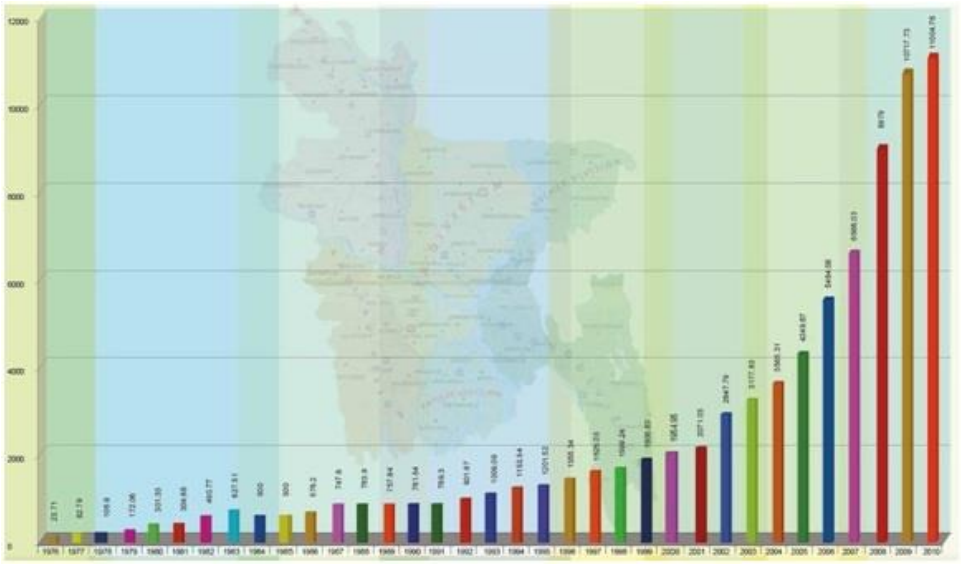
[60] T. Siddiqui, *Climate Change and Human Security*, 2010, *op. cit.*

[61] World Bank, *Global Economic Prospects' (GEP)*, Washington: World Bank, 2006.

[62] S. M. Aminuzamman, *Migration of Skilled Nurses from Bangladesh: An Exploratory Study*, Dhaka: RMMRU, University of Dhaka, 2007, p. 10.

Remittance inflows have also helped to reduce the country's dependency on foreign aid, improved the balance of payment, and helped to increase national savings.[63] Currently, total remittance inflow is four times more than overseas development assistance and nine times more than foreign direct investment.[64] Figure 2 shows that remittance inflows have been on the rise for decades and have increased at an annual rate of 10 per cent for the past 25 years.[65] An analysis of per capita inflow of remittances shows that Bangladesh's per capita remittance flow is 33 per cent higher than that of India, the highest remittance-receiving country in the world.[66]

Figure: 2 Year-wise Remittances Earned from 1976 to 2010 in Million US$



Source: BMET, 2010.[67]

This discussion suggests that international labour migration has played a vital role in the development of Bangladesh. In fact, Bangladesh has the potential to expand its share of world migration. For example, with proper training and policy, Bangladesh can supply nurses abroad to cater to the need in the healthcare sector in the developed world where the aging population is on the

[63] M.G. Quibria, "Migrant Workers and Remittances: Issues for Asian Developing Countries", *Asian Development Review*, 4. No. 1, 1986. pp. 78-99.
[64] T. Siddiqui, *Climate Change and Human Security*, 2010, *op. cit.*.
[65] T. Siddiqui, "*Migration as a livelihood strategy of the poor",* 2003, *op. cit.*
[66] RMMRU, *Migration, Remittances and Development*, Policy Brief 4; Dhaka: RMMRU, 2008.
[67] BMET, 2010, *op. cit.*

rise.[68] Countries in the developed world are creating flexible visa regimes for healthcare workers. Canada has introduced a new programme called the Canadian Live-In Caregiver Programme (LCP) to bring migrant workers to meet the growing demand for nurses.[69]

4.2 The Crucial Nexus: International Labour Migration and Climate Resilience

Migration is a proven strategy for many developing countries including Bangladesh. This section argues that with the proper coordination and policy measures, international labour migration can improve the climate resilience of vulnerable people in Bangladesh. Here, in line with the United Nations International Strategy for Disaster Reduction, 2009, climate resilience is defined as *the ability of a system or society to withstand and absorb, accommodate to and recover from the effects of a climate hazard in a timely and efficient manner through maintaining sustained access to livelihood, shelter, and natural resources*. Climate resilience of a society is determined by a number of properties: financial resources, governance, information, social resources, infrastructure and technology.[70] International labour migration can positively influence many of these determinants of climate resilience in Bangladesh.

4.2.1 Financial Resources

Financial resources are necessary to cover adaptation costs and withstand shocks and disasters. The importance of financial measures is also underscored by the McKinsey report[71] titled '*Shaping climate-resilient development*. "A Framework for Decision-making." This report clearly identified that "cash reserve" and "contingent capital" is among the most cost-effective measures to increase flood-related adaptation in Guyana. Experience suggests that this also holds true for Bangladesh because climate-affected Bangladeshis do not have access to financial resources in the aftermath of climate-related disasters.

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[68] Aminuzamman, 2007, *op. cit*.

[69] IOM, *World Migration Report 2010: The Future for Migration Building Capacities for Change*. Geneva: IOM, 2010.

[70] W.N. Adger, S. Agrawala, M. Mirza, C. Conde, K. O'Brien, J. Pulhin, R. Pulwarty, B. Smit, and K. Takahashi, Assessment of adaptation practices, options, constraints and capacity, in IPCC, "*Climate Change 2007 — Impact, Adaptation and Vulnerability", op. cit.*

[71] Climate Works Foundation, Global Environment Facility, European Commission, Mckinsey and Company, The Rockefeller Foundation, Standard Chartered Bank and Swiss Re, 2009, Economics of Climate Adaptation, "Shaping Climate-resilient Development. A Framework for Decision-making", *Report of the Economics of Climate Adaptation Working Group*, available at: http://www.mckinsey.com/App_Media/Reports/SSO/ECA%20%20%20Shaping%20Climate%20Resilent%20Development%20%20%20Report%20Only.pdf, accessed on 7 August 2011.

Remittance inflow can contribute to the "cash reserve" and "contingent capital." In the aftermath of the Asian Tsunami in 2004, the remittance inflow to Indonesia increased significantly to ensure adequate financial resources for the affected households. Moreover, remittances play a vital role in facilitating the household consumption of basic needs such as food across seasons.[72] In the context of Bangladesh, during *Monga* (the famine season in the drought-prone areas) and in the post-disaster period, remittance flows can ensure food security to the families. In a study, M. Erza[73] shows that families with remittance income do better during livelihood crises than those who do not have access to such income flows. Therefore, many experts argue that income diversification through remittances will be regarded as an important element of the adaptation to slow-onset climate change.[74]

Through remittance transfer from abroad, migrant families can further augment their income and financial wealth. A study by R. Brown and his colleagues[75] found that families in Tongo and Fiji who receive remittances score higher on the wealth index than the families that do not. In both cases, the families without remittance income score negatively on the wealth index. Similarly in Bangladesh, remittance inflows contribute substantially to the household's wealth. Studies found that Bangladeshi migrant workers remit as much as 80 per cent of their income at home.[76] A meta-analysis done by IOM[77] on the use of remittance in Bangladesh found that families who receive remittance use as much as 40 per cent of the total amount of remittances to purchase of lands and 7 per cent for savings (Table 2). These uses of remittances certainly help families to augment wealth that can be utilised for climate adaptation. O. Brown[78] argues that wealth – be it national or individual – has a strong bearing on the adaptation capacity of the society because it enables better

[72] J. Barnett, and N. Chamberlai, "Migration as Climate Change Adaptation: Implications for the Pacific", in Bruce Burson (ed.), *Climate Change and Migration: South Pacific Perspectives*, Wellington: Institute of Policy Studies, 2010.

[73] M. Erza, "Demographic responses to environmental stress in the drought-and famine prone areas of Northern Ethiopia" *International Journal of Population Geography*, Vol. 7, 2001, pp. 259-279.

[74] C. Tacoli, "Crisis or adaptation? Migration and climate change in a context of high mobility", *Environment and Urbanization*, Vol. 21, No. 2, 2009, pp. 513–525.

[75] R. Brown, and G. Leeves, *Impacts of International Migration and Remittances on Source Country Household Incomes in Small Island States; Fiji and Tonga*, Working Papers 07-13, Agricultural and Development Economics Division of the Food and Agriculture Organization of the United Nations (FAO - ESA), 2007.

[76] K.A.S. Murshid, K. Iqbal, and M. Ahmed, *A Study on Remittance Inflows and Utilization*, Dhaka: IOM, Regional Office for South Asia, 2002.

[77] T. Bruyn and U. Kuddus, *Dynamics of Remittance Utilization in Bangladesh,* No. 18, Dhaka: IOM, Regional Office for South Asia, 2005.

[78] O. Brown, 2008, *op. cit.*

disaster risk reduction, disaster education, and speedier responses. For instance, natural disasters between 1994 and 2003 killed an average of 44 people per event in countries with high human development, while 300 people per event were killed in the countries with low human development.

Table 2: Uses of Remittances by Families of Labour Migrants in Bangladesh

Purpose	Percentage of received remittances
Food and clothing	20-36
Purchase of land	3-40
Home construction and repair	2-30
Repay loans	10-19
Marriage and ceremonies	0-10
Education	0-5
Savings	3-7
Funding other people's migration	0-7
Investment in business	0-5
Health care	0-4

Source: T. Bruyn and U. Kuddus, 2005, *op. cit.*

Furthermore, migrant families can access microcredits and other loans to facilitate their adaptation financing at the household level using remittances as payments. Colombia, for instance, is facilitating such a project. This is, however, not to suggest that financial resources accumulated through labour migration automatically go to increase climate resilience. A need exists for coordinated policy, including region-specific programmes, to develop better adaptation options for households and communities and to encourage households to utilise the financial resources at their disposal accordingly.

4.2.2 Infrastructural Determinant

Environmental hazards, in general, have severe impacts on the infrastructure of affected areas in Bangladesh. *Cyclone Sidr*, for instance, destroyed houses worth more than US$800 million in 2007.[79] This figure represents 80 per cent of the total infrastructural loss (Table 3). The massive effect on housing results from the fact that most houses are not solidly constructed and hence are vulnerable to floods and storms. Bangladesh Census data from 2001 shows that in Barguna, a district hit hard by the Cyclone, 99 per cent of the houses are not

[79]GOB, *Cyclone Sidr in Bangladesh Damage, Loss and Needs Assessment For Disaster Recovery and Reconstruction*, Dhaka: GOB, 2008.

brick-built; the majority of them are *kutcha* houses made of clay or bamboo.[80] One of the key adaptation strategies for these regions is to change the housing pattern, i.e., build more brick-built houses or storm- and flood-resistant houses.

As the IOM study[81] shows, one of the main areas of remittance use in Bangladesh is the construction and repair of houses. The families spend as much as 30 per cent of their remittance income to ensure their shelter security. Similar findings are also available from other developing countries, as evident by a study in a Vietnamese village.[82] In that study, the researchers ranked the perceived importance of remittance expenditure and contribution to capital assets, and construction/infrastructure ranked fourth out of seven categories. Likewise, infrastructural developments in the agriculture sector can enhance the adaptation capacity of a community in drought-prone areas of Bangladesh. The McKinsey Report mentioned above found that drip-irrigation in the drought-prone region of Maharashtra, India, could significantly increase the adaptive capacity of the affected people at a very low cost. The same methods can also be replicated in drought-prone areas of Bangladesh.

Remittance utilisation analysis also shows that one of the basic reasons for purchasing land is to increase household agricultural output.[83] A similar trend was also observed by W. Adger and his colleagues. Income diversification of the household facilitated by remittances acts as a safety net for farmers to take the risks inherent in shifting from long-held agriculture practices to more climate resilient agricultural practices.[84] Therefore, it can be argued that remittances sent by labour migrants can be utilised for agricultural adaptation, provided that relevant supporting policies exist at the national and community levels.

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[80] BBS, *Barguna zila at a glance*, available at http://www.bbs.gov.bd/WebTestApplication/userfiles/Image/Wing/Census%20Wing/Zila%20Series/barguna.pdf accessed on 30 June 2011.

[81] Tom and Umbareen, 2005, *op. cit.*

[82] W. Adger, P. Kelly, A. Winkels, L. Huy, and C. Locke, "Migration, Remittances, Livelihood Trajectories, and Social Resilience", *Ambio*, Vol. 31, No. 4, 2002, pp. 358-66.

[83] Tom and Umbareen, 2005, *op. cit.*

[84] Tacoli, 2009, *op. cit.*

Table 3: Damages by Cyclone Sidr, 2007

Sector	Sub-Sector	Disaster Effects (BDT Million)			Disaster Effects (US$ Million)		
		Damage	Losses	Total	Damage	Losses	Total
Infrastructure		**71,064**	**2,130**	**73,194**	**1,029.9**	**30.9**	**1,060.8**
	Housing	57,915	—	57,915	839.3	—	839.3
	Transport	8,006	1,725	9,731	116.0	25.0	141.0
	Electricity	576	359	935	8.3	5.2	13.6
	Water and Sanitation	157	46	203	2.3	0.7	2.9
	Urban and Municipal	1,696	—	1,696	24.6	—	24.6
	Water Resource Control	4,918	—	4,918	71.3	—	71.3
Social Sectors		**4,482**	**1,453**	**5,934**	**65.0**	**21.1**	**86.0**
	Health and Nutrition	169	1,038	1,206	2.4	15.0	17.5
	Education	4,313	415	4,728	62.5	6.0	68.5
Productive Sectors		**1,734**	**32,083**	**33,817**	**25.1**	**465.0**	**490.1**
	Agriculture	1,472	28,725	30,197	21.3	416.3	437.6
	Industry	262	2,035	2,297	3.8	29.5	33.3
	Commerce	—	1,258	1,258	—	18.2	18.2
	Tourism	—	65	65	—	0.9	0.9
Cross-Cutting Issues		**420**	**0**	**420**	**6.1**	**0.0**	**6.1**
	Environment	420	—	420	6.1	—	6.1
Total		**79,904**	**35,665**	**115,569**	**1,158.0**	**516.9**	**1,674.9**

Source: GOB, "*Cyclone Sidr in Bangladesh Damage",* 2008, *op. cit.*

4.2.3 Social Resources

Migration can help to build new social networks in the destination country. These social networks can increase the social capital necessary for climate adaptation. Migrants can bring in new knowledge and capital as a community for investment. Many Mexicans residing in the U.S. form hometown associations and send financial support for the development of their home region.[85] T. Siddiqui and Abrar[86] also observed a similar tendency among Bangladeshi migrants towards community development. They further reported that Bangladeshi migrants living in the United Kingdom (UK) and the U.S. send money to community development and charity. In addition, these communities sometimes make large investment in the home country. The investment in Bangladesh by the non-resident-Bangladeshi-owned *Nandan Group* is a good example of such an investment which points to the potential of using these social networks to fund community-wide climate adaptation initiatives.

[85] X. Bada, "Mexican Hometown Associations", *Citizen action in the Americas* 5, 2003, available at http://www.cipamericas.org/archives/1179, accessed on 14 August 2011; L. Goldring, "Family and Collective Remittances to Mexico: A multi-dimensional Typology", *Development and Change,* Vol. 35, No. 4, 2004, pp. 799-840.

[86] T. Siddiqui and C. R. Abrar, "*Migrant Worker Remittances and Micro-Finance in Bangladesh",* Dhaka/Geneva: ILO, 2001.

Apart from these three determinants of climate resilience, international labour migration also helps to reduce the pressure on natural resources in the vulnerable areas. At the household level, when a person leaves the place of origin, pressure on the family to provide food and shelter lessens. At the national/local level, an estimate shows that there will be 3.5 million Bangladeshi migrant workers if just one member of each household goes abroad from 12 districts vulnerable to sea-level rise.[87] This number could have massive implications for food security in those areas. At the same time, migration will increase human capital endowment for these regions in two major ways. Firstly, as evident by the remittance use, migrant families tend to invest significantly in the education of children and other younger members of the family. Secondly, skills from abroad enrich the migrant worker's own human capital. This will surely contribute positively to climate resilience.[88]

4.2.4 Columbian Temporary and Circular Labour Migration (TCLM) Scheme: A Positive Story[89]

In 2006, the Colombian government initiated an innovative model titled "Temporary and Circular Labor Migration (TCLM)" to facilitate temporary and circular labour migration between Columbia and Spain. This model offers a livelihood alternative through migration to the families vulnerable to natural disasters. It also supports migrants and their families in maximising the utilisation of remittances for the recovery of the affected area through public and private co-funding and international cooperation. This model improves societal resilience through capacity building of the marginalised section. In 2007, for example, as many as 162 women were provided with leadership and local development training to facilitate community development. Under the programme, counseling sessions were provided to the potential migrants before departure to help them prepare for migration and maintain family ties while in abroad. Family members of migrants were also provided with counseling after migrants left the family.

In partnership with the Chamber of Commerce in the town of Armenia (MICROS), IOM further facilitated micro-credit for the migrants using remittances as payment. The credit aims to finance productive projects and education. This programme also has a special focus on reintegration of migrant returnees. To that end, training is provided in entrepreneurship, productive social initiatives, community development and developing business plans. This programme is an innovative model to utilise migration as an adaptation strategy for vulnerable communities by facilitating alternative livelihoods and sustainable

[87] Estimated from 2001 Census Data.
[88] Barnett and Chamberlai, 2010, *op. cit.*
[89] IOM, *World Migration Report,* 2010, *op. cit.*

development so that the community can become more resilient to environmental hazards.

5. Policy Interventions

The inclusion of international labour migration, as argued above, in climate adaptation strategy will have a positive implication in managing and regulating the flow of climate-induced migrants in Bangladesh. However, this strategy needs policy intervention by multiple actors at multiple levels. This section deals with various policy options in this regard.

5.1 Governmental Intervention

Bangladesh government should incorporate international labour migration as an adaptation strategy in its Five-Year National Plan; it should be noted that it has made a cursory reference to such a possibility in its climate strategy. The long-term goal of the policy will be to send at least one member from each household of the vulnerable areas overseas with a total of 0.5 to 1 million migrants over a period of ten years. Such migration primarily should be conceived as a temporary and circular labour migration. A three-pronged approach should be undertaken to reach this goal.

The first component should be the identification of labour markets. As discussed earlier, Bangladesh has strong presence in the Middle Eastern and Southeast Asian labour markets. Moreover, studies show that opportunities for various categories of labour such as nursing are increasing in the developed countries. Khalid Koser further noted that "(H)igh-income economies are increasingly becoming characterized by the segmentation of labor markets. This occurs where sectors of the labor market are eschewed by native workers because they are low-paying, have little security, and are low status, and thus have become dominated by migrant workers. These are often described as '3D jobs' entailing work that is dirty, dangerous, or difficult, and often a combination. They are concentrated in sectors such as agriculture, timber, plantations, heavy industry, construction, and domestic service. Research shows that, even in times of economic downturn, native workers are reluctant to work in these jobs, and so demand for migrant workers continues to some extent irrespective of economic trends"[90].

Apart from the opportunities arising from segregation, many predict that higher temperature associated with climate change will extend growing seasons, reduce frost risk in Europe, Australia, and New Zealand and make new crops

[90] Khalid Koser, "*International Migration: A Very Short Introduction",* New York: Oxford University Press Inc., 2010, p. 32.

viable in those countries.[91] These shifts are likely to create new demand for agricultural labours. To access these markets, Bangladesh should start negotiations, preferably on bilateral basis. However, it should also strongly pursue this case during multilateral climate negotiations, especially by forming alliances with the vulnerable countries. Bangladesh can also try to start temporary labour migrant projects with the friendly countries following the Spain-Colombia model, though this would require a significant diplomatic effort. Moreover, Bangladesh can collaborate with the IOM to undertake such programmes.

The second component of the policy should focus on the identification and profiling of potential climate migrants. Traditionally, the districts that are vulnerable to climate change send fewer migrants compared to other districts of the country.[92] As a result, the presence of governmental agencies that deal with migration is limited in those areas. The government should strategically focus on these areas and increase necessary training and migration facilitation infrastructures. The establishment of a "Migrant Resource Center" as seen in Slovakia[93] can be replicated in Bangladesh in collaboration with local and international NGOs. Such centers could provide necessary trainings and liaise between potential migrants and their prospective employers abroad.

As these distressed people are understandably poor, the government should pay special attention to reduce their migration cost. It is important to note that GOB has recently opened Prabashi Kalyan Bank (Expatriate Welfare Bank) to give collateral-free soft loans to aspiring migrants.[94] It is expected that these loans will help to reduce the cost of migration. However, it is important to monitor the services of the bank so that red-tapism does not hinder the process. Moreover, facilitating direct recruitment processes at the government-to-government level will also decrease the cost by reducing dependency on unscrupulous *dalal* (middle-man) who cheat potential migrants. The recruitment procedures of the Commonwealth Caribbean and Mexican Agricultural Seasonal Workers Programme in Canada can be followed as a model. Under this model, Canadian farmers employ foreign workers under the terms of a memorandum of understanding (MoU) signed between the Canadian and sending countries', governments. The governments of the sending countries assume the responsibility for recruiting workers and negotiating their wages with their Canadian counterparts.[95]

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[91] Barnett and Chamberlai, 2010 , *op. cit.*
[92] T. Siddiqui, *Climate Change and Human Security*, 2010, *op. cit.*
[93] IOM, *World Migration Report*, 2010, *op. cit.*
[94] BDNEWS, *Expats' bank to cut migration cost* available at http://www.bdnews24.com/details.php?id=193550&cid=2, accessed on 1 August 2011.
[95] IOM, *World Migration Report*, 2010, *op. cit.*

The third component of this policy should focus on how the remittances and skills of the migrants can be used productively to encourage investments in adaptation projects in the vulnerable areas. Following Mexican example, the government can introduce new financial instruments such as "the migrant savings development bond," in order to facilitate funding for adaptation projects. Similar schemes have been also proposed by NGOs in Bangladesh. [96] Furthermore, the government can provide special privileges to local and regional enterprises targeting sustainability in the vulnerable regions, such as temporary exemptions from all taxes and other state inspections. Such proposals are under active consideration by the government of Moldova.[97] Moreover, a public-private partnership can be formed to encourage funding by remittances for adaptation projects on improving infrastructures and services. An example case is the "Three for One" programme in Mexico in which the Mexican government provides three dollars for every dollar raised through collective remittances for financing development projects at the local level.[98]

5.2 Private Sector, NGOs and Community Level Intervention

The role of the private sector, NGOs and communities are important in developing international migration as an effective adaptation tool. To facilitate access to credits for household adaptation, microfinance institutions can introduce new productive programmes for individual households, such as credits for drip irrigation in a community. The remittances, as argued previously, can be utilised to pay back these loans. To finance larger projects, migrant families should take advantage of other products offered by the banks.

Financial institutions, especially those in the banking sector, should diversify their investment products targeting these migrants and their adaptation needs. A review of the banking products in Bangladesh shows that most of the banks have, in recent years, customised their investment products for migrants aiming to increase their savings. However, these products are not designed to encourage any productive investments at either the household level or community level. The private sector should be more innovative in diversifying their financial instruments to meet the adaptation needs of specific regions. The investment products available in Mexico could be followed as a model. In Mexico, migrants have access to a financial product called "mezzo credit" (mezzo crédito) to provide greater funds for more mature, community-based, productive projects than what microcredit can do.[99] Examples of mezzo credit show that successful community-based projects can create more employment at the local level.

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[96] RMMRU, *Migration, Remittances and Development*, 2008, *op. cit.*
[97] IOM, *World Migration Report*, 2010, *op. cit.*
[98] X. Bada, 2003, *op. cit.*
[99] Raul Ojeda, Hinojosa and Paule Cruz Takash, *Immigrant Remittance Corridors: Final Project Report* Submitted to the David and Lucille Packard Foundation North American

Though remittances are private money, with appropriate policies, the investment of these remittances in development projects at the local level can be encouraged. The EC-UN Joint Migration and Development Initiative (JMDI) is a good example of this type of policy. Moreover, the concept of "Home Town Associations" (HTA) discussed earlier can be replicated in Bangladesh as well. Though the concept of HTA is more related with permanent migration, it has the potential to work in case of temporary labour migration. This concept is particularly relevant for generating adaptation funds for community-wide adaptation projects. In their study, Vanwey and his colleagues[100] found that local communities in the home country accumulate collective remittances from home-town associations abroad to finance community-based infrastructural facilities such as schools and sewage systems.

5.3 Receiving States and International Actors

At present, labour migrants from Bangladesh go to the developing countries as well as developed countries. However, the number of Bangladeshi migrants going to other developing countries is much higher than the number of Bangladeshi migrants who go to the developed world. As argued above, there exists a potential labour market in the developed world for Bangladesh. Therefore, cooperation from the developed countries is of crucial importance. Without their cooperation, it would be difficult for developing and vulnerable countries alone to address the issue of climate-induced migration. Developed countries should recognise that the capacity of vulnerable developing countries is limited, and they are paying a heavy price as the climate changes, for which they are not responsible. Considering from a climate justice perspective and the market's need for specific categories of labour in their economies, developed countries should reorient their migration policies to benefit people of the most vulnerable regions. There is, however, no denying the fact that the resistance against migrants is an issue of important political debates in many of these countries. Hence, striking right balance between politics and economic needs is a challenge for the leadership in these countries.

These countries also can invest in trainings for skill development in vulnerable communities to prepare aspirant migrants who can take up semi-skilled jobs in their countries.[101] Spain's initiative to facilitate circular labour migration is indeed an encouraging development. The Netherlands is also implementing a similar scheme as reported in the World Migration Report of

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Integration and Development Center University of California, Los Angeles, 10 March 2011.

[100] Vanwey, Leah Karin, Tucker, Catherine M. and McConnell, Eileen Diaz, "Community Organization, Migration, and Remittances in Oaxaca", *Latin American Research Review,* Vol. 40, No. 1, 2005, pp. 83-107.

[101] Barnett *et. al*, 2010, *op. cit.*

2010 by the IOM. Another sign of encouragement is that soft laws are gradually emerging with regard to climate migration. For example, after the Asian Tsunami in 2004, Switzerland and Canada temporarily suspended involuntary returns of failed asylum seekers of affected countries.[102] Sweden has gone one step further by recognising environmental migrants as a special category – "a person in need of protection" – in its immigration policy.[103]

To facilitate such a new scheme of migration, a governance structure is necessary, and the IOM could assume that responsibility. It has worked extensively on facilitating awareness campaigns, skill trainings, returnee integration, utilisation of remittances and connecting receiving and sending countries for circular migration. More importantly, through the new governance structure, the rights of these migrants can be better protected in both the sending and receiving countries. Identifying Bangladesh as a priority country for climate migration, it should undertake new programmes in partnership with the UNDP and UNIFM to facilitate labor migration from the vulnerable countries.

6. Conclusion

Developing countries like Bangladesh will be severely affected by climatic processes and events in the foreseeable future. To mitigate the effects of climatic hazards, the GOB has already started its planning. However, the climate adaptation strategies of Bangladesh do not specifically treat international labour migration as an important adaptation tool.

As the analysis in this paper shows, because Bangladesh is a labour-surplus country, it can send migrant labours from climate-vulnerable areas. This would, on the one hand, reduces pressure on natural resources in those areas. On the other hand, this will provide necessary funding for climate adaptation at the household and the community levels. To reap the benefits of using labor migration as an adaptation tool, Bangladesh has to design appropriate policies in consultation with competent bodies. Implementation of such policies further requires commitments and help from developed countries and international organizations. Finally, with the support of various stakeholders, international labour migration can ultimately help to address climate adaptation in the affected areas of Bangladesh.

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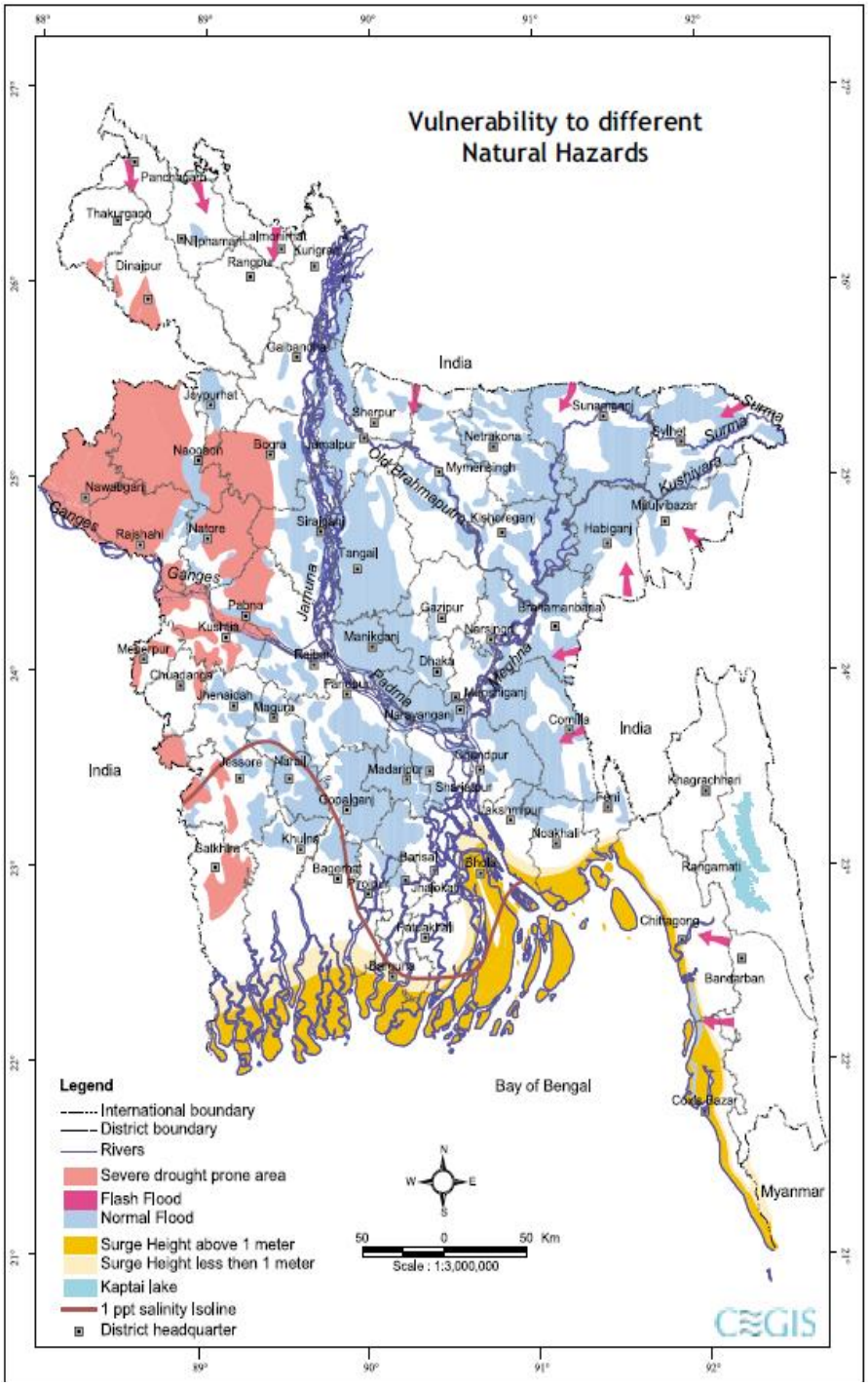
[102] O. Brown, 2008, *op. cit.*

[103] S. F. Martin, *Climate Change and International Migration*, Washington, DC: The German Marshall Fund of the United States, 2010.

Annex 1: Map of Bangladesh with Climate-related Hazards



Annex 2: Category-wise Overseas Employment from 1976 to 2010

Up to Dec, 2010

Year	Worker's Category				Total
	Professional	Skilled	Semi-skilled	Less-skilled	
1976	568	1,775	543	3,201	**6,087**
1977	1,766	6,447	490	7,022	**15,725**
1978	3,455	8,190	1,050	10,114	**22,809**
1979	3,494	7,005	1,685	12,311	**24,495**
1980	1,983	12,209	2,343	13,538	**30,073**
1981	3,892	22,432	2,449	27,014	**55,787**
1982	3,898	20,611	3,272	34,981	**62,762**
1983	1,822	18,939	5,098	33,361	**59,220**
1984	2,642	17,183	5,484	31,405	**56,714**
1985	2,568	28,225	7,823	39,078	**77,694**
1986	2,210	26,294	9,265	30,889	**68,658**
1987	2,223	23,839	9,619	38,336	**74,017**
1988	2,670	25,286	10,809	29,356	**68,121**
1989	5,325	38,820	17,659	39,920	**101,724**
1990	6,004	35,613	20,792	41,405	**103,814**
1991	9,024	46,887	32,605	58,615	**147,131**
1992	11,375	50,689	30,977	95,083	**188,124**
1993	11,112	71,662	66,168	95,566	**244,508**
1994	8,390	61,040	46,519	70,377	**186,326**
1995	6,352	59,907	32,055	89,229	**187,543**
1996	3,188	64,301	34,689	109,536	**211,714**
1997	3,797	65,211	43,558	118,511	**231,077**
1998	9,574	74,718	51,590	131,785	**267,667**
1999	8,045	98,449	44,947	116,741	**268,182**
2000	10,669	99,606	26,461	85,950	**222,686**
2001	5,940	42,742	30,702	109,581	**188,965**
2002	14,450	56,265	36,025	118,516	**225,256**
2003	15,862	74,530	29,236	134,562	**254,190**
2004	12,202	110,177	28,327	122,252	**272,958**
2005	1,945	113,655	24,546	112,556	**252,702**
2006	925	115,468	33,965	231,158	**381,516**
2007	676	165,338	183,673	482,922	**832,609**
2008	1,864	292,364	132,825	448,002	**875,055**
2009	383	104,627	18,419	341,922	**465,351**
2010	387	90,621	12,469	279,673	**383,150**
Total	**180,680**	**2,151,125**	**1,038,137**	**3,744,468**	**7,114,410**
%	2.54	30.24	14.59	52.63	

Source: BMET Online Database, 2010, *op. cit.*